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OHIO FARM MACHINERY ECONOMIC COST ESTIMATES FOR 1998

Revised and Adapted for Ohio*

by
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The tables in this publication estimate farm machinery operations or function costs for 1998. The estimates use an economic engineering approach. The data represents an average farming industry cost for specified machines and operations.

Machine costs are separated into time and use-related categories. Overhead costs accrue to the owner whether or not a machine is used. Overhead includes time-related economic costs: depreciation, interest, insurance and housing. There are no personal property taxes in Ohio. Operating costs occur only when a machine is used. They include fuel, lubrication, use-related repairs, and labor.

OVERHEAD COSTS: Time-related costs are prorated over a 12-year economic life. Salvage values are estimated based on procedures suggested in a February 1995 *American Journal of Agricultural Economics* article "Depreciation Patterns for Agricultural Machinery," by Timothy Cross and Gregory Perry. Salvage values at 12 years of life now range from 18 to 50 percent. Producers are keeping machinery longer than in the past. Managers, striving for cost control, are sometimes buying a second item often "twinned" to one now in use.

Purchase prices are discounted from manufacturers' list prices. A 10 percent discount off list price appears "normal." The tables include some adjustment for delivery and setup. An equivalent price adjustment for the income tax expensing option is not included. Insurance is 0.85 percent of new cost. A housing charge on average investment of 33 cents per square foot of shelter space needed per year is made.

A six percent "real" (inflation-adjusted) interest rate is used in the cost estimates. This real rate calculated by taking a nominal rate charged by lenders, minus a measure of the inflation rate per year expected over the years of ownership. The rationale for using the lower real rate is that inflation is expected to increase the income that the equipment will generate in the later years of its life, other things being equal. The first year's income is consequently an underestimate of productivity in later years. An interest charge based on the lower real rate correlates with the lower first year income.

Formulas used to compute machinery overhead costs:

$$\text{Depreciation, \$ per year} = \frac{\text{Purchase cost - salvage value}}{\text{Years you will use machine}}$$

$$\text{Interest, \$ per year} = \frac{\text{purchase cost + salvage value}}{2} \times \text{"real" interest rate}$$

$$\text{Insurance, \$ per year} = \frac{\text{purchase cost + salvage value}}{2} \times \text{insurance rate}$$

$$\text{Housing, \$ per year} = \text{price per sq. foot x sq. feet shelter space required}$$

OPERATING COSTS: Fuel cost is calculated by multiplying the fuel consumption by the price of fuel, with fuel consumption assumed to be 0.053 gallons of diesel fuel per horsepower hour. The price of diesel fuel is projected at 80 cents per gallon. All power units, tractors, combines, trucks, etc., are assumed to use diesel fuel. Lubrication cost is assumed to be 15 percent of fuel cost.

The formulas for repair and maintenance costs estimate total accumulated repair costs according to the accumulated hours of life-time use. Repair and maintenance calculations are based

on American Society of Agricultural Engineers (ASAE) formulas. The total cost is then divided to an average per hour cost estimate. The amount of annual use of a machine is an estimate of the number of hours a commercial farmer would use that particular machine in one year.

Labor is charged at an hourly wage rate, which includes 30 percent of benefits factor. Charge rates are $9.50 per hour for unskilled labor and $12.00 per hour for skilled labor. Labor per acre for an operation such as plowing and disking is calculated by using the work rate on the implement. Less labor per acre is used in a disking operation that covers more acres per hour than in a plowing operation.

These estimates will not represent any given individual's cost. They should not take the place of accurate record-keeping. They can still be used to help plan the cropping operation if more specific data are not available. Differences in buying power, repair programs, average annual use and overall replacement programs should be considered when making adjustments.

Machinery costs are substantial; control of them is important. Custom charges are often based upon them. No one should do custom work unless the charge will cover operating costs plus a return for one's risk and time. Ideally, all allocated per acre or hour overhead costs should also be covered by anyone offering to do custom work. The market for custom work usually does not cover all costs. The market is usually somewhere between the operating costs and the total of operating plus allocated per acre or hour overhead costs.

Tables 1-5 provide the 1998 machinery function costs broken down into several categories. Some relevant supporting data also are included. A spreadsheet template is also available for downloading from the Department of Applied Economics, University of Minnesota, WWW site, for use in analyzing specific situations or just to better understand the methods used to calculate the numbers. The address is: http://apecon.agri.umn.edu/crop.html.

Table 1. Tractors, Combines (Without Heads) & Trucks Economic Cost for 1998

Tractor Combine or Truck Size	Net Cost of the New Power Unit	Annual Hours of Use	--- Overhead --- Cost per Year	--- Overhead --- Cost per Hour	--- Operating --- Expense per[3/] Hour	--- Operating --- Expense per[3/] Year	--- Total Cost --- of Use per Year	--- Total Cost --- of Use per Hour	Maintenance & Repair Cost/Hr.	Diesel Use/Hr. Gallons
40 Hp	19,350	500	1,964	3.93	2.85	1,427	3,391	6.78	0.90	2.1
60 Hp	25,830	500	2,616	5.23	4.13	2,066	4,682	9.36	1.21	3.2
75 Hp	33,210	500	3,357	6.71	5.21	2,603	5,961	11.92	1.55	4.0
105 MFWD	51,300	550	5,262	9.57	6.25	3,437	8,699	15.82	1.13	5.6
130 MFWD	70,020	550	7,168	13.03	7.88	4,334	11,502	20.91	1.54	6.9
160 MFWD	88,110	600	9,506	15.84	9.92	5,950	15,455	25.76	2.11	8.5
200 MFWD	104,850	600	11,302	18.84	12.27	7,361	18,664	31.11	2.52	10.6
225 MFWD	114,120	500	12,258	24.52	13.25	6,627	18,885	37.77	2.28	11.9
260 4Wd	117,900	500	12,661	25.32	15.04	7,518	20,179	40.36	2.36	13.8
310 4Wd	118,800	500	12,757	25.51	17.49	8,746	21,503	43.01	2.38	16.4
360 4Wd	127,440	500	13,679	27.36	20.10	10,051	23,730	47.46	2.55	19.1
425 4Wd	149,580	500	16,041	32.08	23.71	11,857	27,898	55.80	2.99	22.5
190 HP Combine	104,490	300	11,884	39.61	28.27	8,480	20,364	67.88	19.00	10.1
220 HP Combine	123,300	300	14,038	46.79	33.15	9,945	23,984	79.95	22.42	11.7
275 HP Combine	136,170	300	15,523	51.74	38.17	11,452	26,975	89.92	24.76	14.6

* See footnotes at end of tables

Table 2. Tillage Equipment Economic Cost Structure for 1998

Machine	Tractor Size (HP)	Net Cost of the New Implement	-- Estimated -- Work Performed Ac/hr	Ac/yr	Total Cost / Hour[1/]	-------- Total Cost / Acre[2/] -------- Equipment Tractor	+Machine	Labor +Charge	Total = Dollars	Operating Expense / Acre[3/]	Diesel Fuel Gal/Ac
Chisel Plow 11 ft	75	4,860	6.40	640	28.42	1.86	1.06	1.51	4.44	1.07	0.62
Chisel Plow 15 ft	130	6,300	8.73	873	39.32	2.40	1.00	1.11	4.51	1.14	0.79
Chisel Plow 19 ft	160	10,890	11.05	1,105	49.98	2.33	1.31	0.88	4.52	1.23	0.77
Chisel Plow 23 ft	200	13,680	13.38	1,338	58.94	2.32	1.36	0.72	4.40	1.26	0.79
Chisel Plow 31 ft	225	17,370	18.04	1,804	70.43	2.09	1.27	0.54	3.91	1.06	0.66
Chisel Plow 37 ft	310	19,800	21.53	2,153	78.98	2.00	1.22	0.45	3.67	1.12	0.76
Chisel Plow 57 ft	425	26,398	33.16	3,316	100.12	1.68	1.04	0.29	3.02	0.98	0.68
Moldboard Plow 4-18	75	9,720	2.78	334	33.55	4.29	4.29	3.48	12.06	3.38	1.43
Moldboard Plow 5-18	105	11,970	3.48	417	40.24	4.55	4.24	2.79	11.57	3.28	1.60
Moldboard Plow 6-18	130	14,220	4.17	542	47.66	5.01	4.09	2.32	11.42	3.46	1.65
Moldboard Plow 8-18	160	19,080	5.56	723	58.27	4.63	4.10	1.74	10.47	3.36	1.52
Moldboard Plow 10-18	260	25,470	6.95	1,043	79.37	5.80	4.22	1.39	11.41	4.05	1.98
Reversible Plow 2-18	60	2,250	1.39	209	21.79	6.73	1.96	6.97	15.66	3.80	2.29
Reversible Plow 5-18	160	6,660	3.48	522	43.25	7.41	2.24	2.79	12.44	3.84	2.44
Reversible Plow 5-18 HD	160	9,270	3.48	522	46.31	7.41	3.12	2.79	13.32	4.23	2.44
Reversible Plow 8-18	225	13,050	5.56	835	62.75	6.79	2.75	1.74	11.28	3.59	2.14
Field Cultivator 12.5 ft	75	5,220	9.02	1,082	27.95	1.32	0.70	1.07	3.10	0.78	0.44
Field Cultivator 18 ft	105	8,370	12.98	1,558	35.46	1.22	0.77	0.75	2.73	0.71	0.43
Field Cultivator 28 ft	160	13,230	20.19	2,423	51.13	1.28	0.78	0.48	2.53	0.72	0.42
Field Cultivator 37 ft	225	18,810	26.68	3,202	69.55	1.42	0.83	0.36	2.61	0.74	0.45
Field Cultivator 47 ft	260	28,170	33.90	4,068	82.78	1.19	0.97	0.29	2.44	0.73	0.41
Field Cultivator 60 ft	310	34,920	43.27	5,193	93.01	0.99	0.93	0.22	2.15	0.68	0.38

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Table 2. Tillage Equipment Economic Cost Structure for 1998 (Continued)

Machine	Tractor Size (HP)	Net Cost of the New Implement	-- Estimated -- Work Performed Ac/hr	Ac/yr	Total Cost / Hour[1/]	-------- Total Cost / Acre[2/] -------- Equipment Tractor	+Machine	Labor +Charge	Total = Dollars	Operating Expense / Acre[3/]	Diesel Fuel Gal/Ac
Chisel Plow, Front Disk 8.75 ft	105	8,370	5.41	541	37.04	2.92	2.13	1.79	6.85	1.51	1.03
Chisel Plow, Front Disk 16.25 ft	200	15,030	10.05	1,005	61.19	3.10	2.03	0.96	6.09	1.56	1.06
Chisel Plow, Front Disk 18.75 ft. fold	260	19,710	11.59	1,159	76.56	3.48	2.29	0.84	6.61	1.68	1.19
Chisel Plow, Front Disk 21.25 ft fold	310	22,680	13.14	1,314	83.09	3.27	2.31	0.74	6.33	1.72	1.25
Offset Disk 7 ft	60	4,860	3.25	325	25.67	2.89	2.04	2.99	7.91	1.61	0.98
Offset Disk 12 ft	105	8,820	5.56	556	37.53	2.84	2.16	1.74	6.75	1.48	1.00
Offset Disk 16 ft	130	10,980	7.42	742	45.75	2.82	2.04	1.31	6.17	1.40	0.93
Offset Disk Wing 21 ft	200	15,660	9.74	974	62.00	3.19	2.18	1.00	6.37	1.63	1.09
Tandem Disk 8.75 ft	40	5,040	5.41	541	23.39	1.25	1.28	1.79	4.32	0.74	0.39
Tandem Disk 11ft	60	5,580	6.40	640	27.48	1.46	1.32	1.51	4.29	0.94	0.50
Tandem Disk 15 ft	105	10,260	8.73	873	40.72	1.81	1.74	1.11	4.67	1.11	0.64
Tdm Disk 21 ft fold	160	17.100	12.22	1,222	60.50	2.11	2.05	0.79	4.95	1.28	0.69
Tdm Disk HD 12 ft	130	8,820	6.98	698	43.68	3.00	1.87	1.39	6.26	1.55	0.99
Tdm Disk HD 18 ft fold	160	16,830	10.47	1,047	60.19	2.46	2.36	0.93	5.75	1.48	0.81
Tdm Disk HD 30 ft fold	360	28,440	17.45	1,745	98.31	2.72	2.36	0.56	5.63	1.70	1.09

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Table 2. Tillage Equipment Economic Cost Structure for 1998 (Continued)

Machine	Tractor Size (HP)	Net Cost of the New Implement	-- Estimated -- Work Performed Ac/hr	Ac/yr	Total Cost / Hour[1/]	Total Cost / Acre[2/] Equipment Tractor	+Machine	Labor +Charge	Total = Dollars	Operating Expense / Acre[3/]	Diesel Fuel Gal/Ac
V-Ripper 25" OC 10 ft	160	9,990	6.18	618	48.47	4.17	2.11	1.57	7.84	2.13	1.37
V-Ripper 25" OC 14 ft	200	12,150	8.65	865	56.66	3.59	1.83	1.12	6.55	1.87	1.22
V-Ripper 25" OC 18 ft	260	15,570	11.13	1,113	70.39	3.63	1.83	0.87	6.33	1.80	1.24
V-Ripper 25" OC 25 ft	310	18.810	15.45	1,545	77.47	2.78	1.60	0.63	5.01	1.52	1.06
V-Ripper 30" OC 12.5 ft	160	8,280	7.73	773	46.42	3.33	1.42	1.25	6.01	1.63	1.10
V-Ripper 30" OC 17 ft	200	10,530	10.51	1,051	54.79	2.96	1.33	0.92	5.21	1.49	1.01
V-Ripper 30" OC 22.5 ft.	360	15,210	13.91	1,391	77.37	3.41	1.45	0.70	5.56	1.80	1.37
Comb Fld Cult Incorp 16 ft	160	15,030	11.54	1,154	57.20	2.23	1.88	0.84	4.96	1.28	0.73
Comb Fld Cult Incorp 23 ft	200	24,750	16.59	1,659	76.54	1.88	2.15	0.58	4.61	1.22	0.64
Comb Fld Cult Incorp 26 ft	260	26,730	18.03	1,803	88.70	2.24	2.14	0.54	4.92	1.31	0.76
Comb Fld Cult Incorp 33 ft	310	34,020	23.80	2,380	101.91	1.81	2.07	0.41	4.28	1.20	0.69
Comb Disk & V-Ripper 12.5	225	18,180	6.44	644	71.72	5.87	3.77	1.50	11.14	2.70	1.85
Comb Disk & V-Ripper 17.5	360	23,310	9.02	902	88.49	5.26	3.48	1.07	9.82	2.82	2.12
Disk Fld Cult Finish 13 ft	130	11,070	6.70	670	46.20	3.12	2.33	1.45	6.90	1.55	1.03
Dsk, Fld Cult Finish 22 ft	200	19,980	11.33	1,133	68.04	2.74	2.40	0.86	6.00	1.48	0.94
Dsk, Fld Cult Finish 30 ft	260	26,820	15.45	1,545	86.43	2.61	2.35	0.63	5.59	1.37	0.89
Dsk, Fld Cult Finish 38 ft	310	32,040	19.58	1,958	96.07	2.20	2.22	0.50	4.91	1.27	0.84
Springtooth Drag 30 ft	60	7,650	21.64	649	45.44	0.43	1.19	0.47	2.10	0.26	0.15
Springtooth Drag 48 ft	75	9,720	34.62	1,212	51.80	0.34	0.86	0.30	1.50	0.21	0.11
Springtooth Drag 58 ft	105	11,340	41.83	4,183	40.19	0.38	0.36	0.23	0.96	0.24	0.13
Roller Harrow 12 ft.	75	8,460	7.42	742	33.33	1.61	1.58	1.31	4.49	0.96	0.54
Roller Harrow 28 ft.	160	22,050	17.31	1,731	65.27	1.49	1.72	0.56	3.77	0.86	0.49

* See footnotes at end of tables

Table 3. Planting Equipment Economic Cost Structure for 1998

Machine	Tractor Size (HP)	Net Cost of the New Implement	-- Estimated -- Work Performed Ac/hr	Ac/yr	Total Cost / Hour[1/]	Total Cost / Acre[2/] Equipment Tractor	+Machine	Labor +Charge	Total = Dollars	Operating Expense / Acre[3/]	Diesel Fuel Gal/Ac
Row Crop Planter 4-36	40	12,510	5.60	392	42.91	1.21	3.97	2.49	7.66	1.17	0.38
Row Crop Planter 6-30	60	16,560	7.00	490	52.55	1.34	4.18	1.99	7.51	1.28	0.45
Row Crop Planter 8-30	75	23,670	9.33	653	67.47	1.28	4.46	1.49	7.23	1.30	0.43
Row Crop Planter 12-30	105	35,910	14.00	980	92.88	1.13	4.51	0.99	6.63	1.20	0.40
Min-Til Planter 4-36	60	18,540	5.09	356	55.86	1.84	6.40	2.73	10.97	1.88	0.62
Min-Til Planter 6-30	75	24,120	6.36	509	64.83	1.87	6.13	2.19	10.19	2.11	0.62
Min-Til Planter 8-30	105	28,710	8.48	594	80.03	1.86	5.93	1.64	9.43	1.73	0.66
Min-Til Planter 12-30	160	49,770	12.73	1,273	111.76	2.02	5.66	1.09	8.78	2.48	0.67
Min-Til Planter 16-30	200	70,380	16.97	2,206	140.87	1.83	5.65	0.82	8.30	3.13	0.62
Potato Planter Filler		11,790	5.75	322	25.05	0.00	4.36	0.00	4.36	0.54	0.00
Potato Row Marker 4 row	130	11,070	4.98	214	62.84	4.20	5.43	2.99	12.62	1.77	1.38
Potato Row Marker 6 row	160	17,280	7.47	321	82.86	3.45	5.65	1.99	11.09	1.53	1.14
Potato Row Marker 8 row	160	22,140	10.79	464	94.86	2.39	5.02	1.38	8.79	1.09	0.79
Potato Planter 4 row	130	33,210	3.83	214	114.69	5.46	17.52	6.96	29.94	4.05	1.80
Potato Planter 6 row	130	44,280	5.75	322	137.14	3.64	15.59	4.64	23.87	3.14	1.20
Potato Planter 8 row	160	60,930	8.30	465	175.71	3.10	14.85	3.21	21.16	2.88	1.02
Beet Planter 12 row	105	23,220	4.67	280	75.89	3.39	9.68	3.19	16.26	2.57	1.19
Grain Drill 25 ft	130	23,490	10.61	848	72.44	1.97	3.60	1.26	6.83	1.50	0.65
Grain Drill 30 ft	130	29,610	12.73	1,018	82.22	1.64	3.77	1.05	6.46	1.41	0.54
Grain Drill 35 ft	160	35,730	14.85	1,188	96.84	1.73	3.89	0.90	6.52	1.49	0.57

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Table 3. Planting Equipment Economic Cost Structure for 1998 (Continued)

Machine	Tractor Size (HP)	Net Cost of the New Implement	-- Estimated -- Work Performed Ac/hr	Ac/yr	Total Cost / Hour[1/]	Total Cost / Acre[2/] Equipment Tractor	+Machine	Labor +Charge	Total = Dollars	Operating Expense / Acre[3/]	Diesel Fuel Gal/Ac
Presswheel Drill 12 ft	75	17,190	5.09	382	54.08	2.34	5.67	2.62	10.62	2.09	0.78
Presswheel Drill 16 ft	105	22,320	6.79	509	66.56	2.33	5.51	1.96	9.81	1.96	0.82
Presswheel Drill 20 ft	130	23,940	8.48	636	74.48	2.46	4.74	1.57	8.78	1.82	0.81
Presswheel Drill 30 ft	160	35,190	12.73	1,018	95.92	2.02	4.47	1.05	7.54	1.72	0.67
Presswheel Drill 40 ft	200	46,170	16.97	1,358	118.86	1.83	4.39	0.78	7.00	1.65	0.62
Air Seeder Drill 36 ft	260	54,270	15.27	1,222	140.93	2.64	5.71	0.87	9.23	2.19	0.90
No-Till Drill 15 ft	130	26,010	6.36	509	76.17	3.29	6.59	2.09	11.97	2.63	1.08
No-Till Drill 20 ft	160	37,890	8.48	679	100.04	3.04	7.18	1.57	11.79	2.69	1.00
No-Till Drill 30 ft	200	56,070	12.73	1,018	134.41	2.44	7.07	1.05	10.56	2.46	0.83

* See footnotes at end of tables

Table 4. Crop Maintenance Equipment Economic Cost Structure for 1998

Machine	Tractor Size (HP)	Net Cost of the New Implement	-- Estimated -- Work Performed Ac/hr	Ac/yr	Total Cost / Hour[1/]	-------- Total Cost / Acre[2/] -------- Equipment Tractor	+ Machine	Labor +Charge	Total = Dollars	Operating Expense / Acre[3/]	Diesel Fuel Gal/Ac
Cultivator 4-36	75	3,330	6.18	618	25.97	1.93	0.67	1.60	4.20	0.97	0.64
Cultivator 6-30	60	4,230	7.73	773	24.51	1.21	0.68	1.28	3.17	0.66	0.41
Cultivator 8-30	130	5,670	10.30	1,030	37.87	2.03	0.69	0.96	3.68	0.89	0.67
Cultivator 12-30	160	11,160	15.45	1,545	49.12	1.67	0.87	0.64	3.18	0.81	0.55
Cultivator 16-30	200	13,680	20.61	2,061	57.55	1.51	0.80	0.48	2.79	0.75	0.51
Cultivator Hi Res 4-36	75	5,940	6.18	618	29.10	1.93	1.17	1.61	4.71	1.07	0.64
Cultivator Hi Res 6-30	105	8,100	7.73	773	35.47	2.05	1.27	1.28	4.59	1.06	0.72
Cultivator Hi Res 8-30	160	11,070	10.30	1,030	48.94	2.50	1.29	0.96	4.75	1.22	0.82
Cultivator Hi Res 12-30	225	18,810	15.45	1,545	71.60	2.44	1.45	0.74	4.63	1.14	0.77
Rotary Hoe 15 ft	75	3,780	18.55	1,855	27.25	0.64	0.29	0.53	1.47	0.34	0.21
Rotary Hoe 21 ft	105	5,760	25.96	2,596	34.00	0.61	0.32	0.38	1.31	0.30	0.21
Rotary Hoe 30 ft	160	8,730	37.09	3,709	48.06	0.69	0.33	0.27	1.30	0.33	0.23
Potato Cultivator 4 row	75	4,230	5.36	778	26.13	2.22	0.81	1.84	4.87	1.26	0.74
Potato Cultivator 6 row	105	6,390	8.04	1,126	32.40	1.97	0.83	1.23	4.03	1.06	0.69
Sugar Beef Cult. 12 row	105	9,540	5.60	336	42.54	2.82	3.01	1.76	7.60	1.33	0.99
S-P Boom Sprayer 47 ft		50,670	25.92	2,592	90.53	0.00	2.91	0.58	3.49	0.94	0.00
S-P Boom Sprayer 60 ft		63,000	33.09	3,309	108.83	0.00	2.84	0.45	3.29	0.92	0.00
Sprayer 30 ft	40	4,140	15.36	1,229	29.43	0.44	0.50	0.98	1.92	0.31	0.14
Boom Sprayer 50 ft	60	5,220	25.61	2,561	32.74	0.37	0.33	0.59	1.28	0.26	0.12
Sprayer Hi Pres 50 ft	60	21,960	23.64	2,364	57.50	0.40	1.40	0.63	2.43	0.62	0.13
Hooded Sprayer 8 row, 20 ft	40	5,850	10.24	819	32.33	0.66	1.03	1.46	3.16	0.54	0.21
Anhydrous Appl. 30 ft	160	17,100	12.73	509	91.85	2.02	4.20	0.99	7.22	1.53	0.67
Fert. Sprd. 4 T./40 ft	60	8,820	23.76	713	56.76	0.39	1.46	0.53	2.39	0.37	0.13
Corn Stalk Chopper 12 ft	60	7,830	4.65	465	31.15	2.01	2.44	2.25	6.69	1.45	0.68
Potato Shredder 18 ft.	130	11,520	6.98	698	48.20	3.00	2.41	1.50	6.90	1.68	0.99
Stalk Shredder, 20 ft	130	13,410	7.76	776	51.03	2.70	2.54	1.35	6.58	1.59	0.89
Rock Picker 6 ft	75	11,520	1.42	85	51.64	8.41	19.96	8.04	36.41	8.50	2.80

* See footnotes at end of tables

Table 5. Harvesting Equipment Economic Cost Structure for 1998

Machine	Tractor Size (HP)	Net Cost of the New Implement	-- Estimated -- Work Performed Ac/hr	Ac/yr	Total Cost / Hour[1/]	Total Cost / Acre[2/] Equipment Tractor	+Machine	Labor +Charge	Total = Dollars	Operating Expense / Acre[3/]	Diesel Fuel Gal/Ac
Mower-Conditioner 9 ft	40	12,510	4.36	349	36.90	1.55	4.51	2.39	8.46	1.21	0.49
Rotary Hay Mower 6 ft	40	5,940	2.91	291	26.34	2.33	3.46	3.27	9.06	2.18	0.73
Rotary Mow/Cond. 9 ft	75	15,030	4.36	349	45.08	2.73	5.31	2.29	10.33	1.78	0.91
Hay Rake (Hyd) 9 ft	40	4,410	3.49	698	20.03	1.94	1.07	2.72	5.74	1.16	0.61
Hay Swather-Cond 12 ft	60	20,070	5.82	465	50.60	1.61	5.46	1.63	8.70	1.38	0.55
Swather-Cond 16 ft self prop		64,980	7.76	621	104.92	0.00	12.30	1.22	13.53	0.90	0.00
Grain Swather 18 ft pull type	75	9,810	8.73	698	36.51	1.37	1.73	1.09	4.18	0.67	0.46
Grain Swather 21 ft pull type	75	14,490	10.18	815	43.25	1.17	2.14	0.93	4.25	0.60	0.39
Grain Swather 21 ft self prop		44,280	10.18	815	76.13	0.00	6.54	0.93	7.48	0.56	0.00
Hay Baler PTO Twine	40	14,040	4.36	873	34.71	1.55	3.35	3.05	7.95	2.31	0.49
Round Baler 1000 lb	60	14,940	3.01	603	41.98	3.11	7.32	3.50	13.93	6.14	1.06
Round Baler 1500 lb	60	17,460	4.02	804	45.70	2.33	6.42	2.62	11.37	5.21	0.79
Rd Baler/Wrap. 1000 lb	60	19,620	3.01	603	48.84	3.11	9.60	3.50	16.21	7.64	1.06
Rd Baler Wrapper Silage	60	16,740	2.48	372	43.04	3.77	9.74	3.83	17.34	6.82	1.28
Bale Wrapper Dry Hay	40	7,200	2.48	372	26.76	2.73	4.22	3.83	10.78	3.37	0.85
Lg Rectangular Baler 24 ft	130	52,290	16.29	815	142.33	1.28	6.81	0.65	8.74	0.72	0.42
Forage Harvester 2 row	105	24,210	1.65	165	58.49	9.56	17.74	8.05	35.35	6.50	3.36
Forage SP Harvstr 2 row		132,300	2.04	305	123.53	0.00	54.12	6.54	60.66	6.11	0.00
Forage SP Harvstr 3 row		141,300	3.05	458	132.13	0.00	38.90	4.36	43.26	4.67	0.00
Large Forage Blower	60	5,040	1.00	50	30.04	9.36	11.17	9.50	30.04	4.95	3.18
Combine Grain Head 15'	Sm Comb	8,820	5.09	1,018	87.25	13.33	1.19	2.62	17.14	5.75	1.98
Combine Grain Head 20'	Md Comb	9,270	6.79	1,358	99.63	11.78	0.94	1.96	14.68	5.04	1.72
Combine Grain Head 30'	Lg Comb	16,740	10.18	2,036	114.64	8.83	1.12	1.31	11.26	3.94	1.43
Corn Combine 4-36	Sm Comb	16,470	3.36	672	92.44	20.20	3.35	3.96	27.51	8.98	3.00
Corn Combine 4-30	Sm Comb	18,000	2.80	560	93.44	24.24	4.37	4.76	33.37	10.84	3.60
Corn Combine 6-30	Md Comb	22,230	4.20	840	108.41	19.03	3.61	3.17	25.81	8.51	2.78
Corn Combine 8-30	Md Comb	28,800	5.09	1,018	112.89	15.70	3.86	2.62	22.18	7.17	2.29
Corn Combine 12-30	Lg Comb	44,460	7.64	1,527	133.39	11.77	3.95	1.74	17.47	5.68	1.91

(Continued on next page)

Table 5. Harvesting Equipment Economic Cost Structure for 1998 (Continued)

Machine	Tractor Size (HP)	Net Cost of the New Implement	-- Estimated -- Work Performed Ac/hr	Ac/yr	Total Cost / Hour[1/]	-------- Total Cost / Acre[2/] -------- Equipment Tractor	+Machine	Labor +Charge	Total = Dollars	Operating Expense / Acre[3/]	Diesel Fuel Gal/Ac
Soybean Combine Hd Sm 13 ft	Sm Comb	11,880	3.86	772	89.32	17.58	2.10	3.45	23.14	7.68	2.61
Soybean Combine Hd Md 15 ft	Md Comb	12,690	4.45	891	101.93	17.95	1.94	2.99	22.88	7.77	2.62
Soybean Combine Hd Lg 18 ft	Lg Comb	13,860	5.35	1,069	112.73	16.82	1.78	2.49	21.09	7.44	2.73
Soybean Combine Hd Lg 25 ft	Lg Comb	16,380	7.42	1,485	114.43	12.11	1.51	1.79	15.41	5.40	1.96
Potato Windrower 2 row	75	28,800	1.49	149	60.35	7.98	25.55	6.87	40.40	7.86	2.66
Potato Windrower 4 row	105	63,090	2.99	299	108.90	5.29	27.72	3.43	36.45	6.89	1.86
Potato Harvester Seed 2R	130	60,930	1.38	295	107.38	15.17	34.61	28.10	77.88	19.32	5.00
Potato Harvester Seed 4R	130	96,300	2.76	590	134.92	7.58	27.29	14.05	48.92	13.61	2.50
Potato Harvester 2 row	130	49,860	1.84	294	105.09	11.37	24.71	21.08	57.16	11.72	3.75
Disk Bean Top Cutter 6 Row	105	11,880	6.40	512	48.15	2.47	2.97	2.08	7.52	1.38	0.87
Sugar Beet Lifter 4 row	105	43,290	3.47	277	116.02	4.56	25.07	3.84	33.48	9.89	1.61
Sugar Beet Lifter 6 row	130	56,520	5.20	520	134.89	4.02	19.36	2.56	25.94	9.04	1.33
Sugar Beet Topper 6 row	75	17,190	5.33	427	52.97	2.24	5.45	2.25	9.93	1.96	0.75
Sugar Beet Topper 12 row	160	33,210	10.67	853	93.76	2.41	5.25	1.13	8.79	1.88	0.80
Sugar Beet Wagon 8 Ton	75	9,180	3.47	277	35.62	3.44	4.10	2.74	10.28	2.06	1.15
Sugar Beet Wagon 20 Ton	200	36,540	5.20	520	86.39	5.98	8.81	1.83	16.61	3.93	2.04
Sugar Beet Wagon 24 Ton	225	38,700	5.20	520	95.71	7.26	9.32	1.83	18.41	4.21	2.29
Manue Spreader 150 bu	75	6,030	3.49	349	33.12	3.42	3.30	2.78	9.49	2.77	1.14
Manure Spreader 300 bu	105	8,010	3.49	349	40.79	4.53	4.38	2.78	11.69	3.49	1.59
Manure Spreader 400 bu	130	11,880	4.65	465	53.23	4.49	4.86	2.08	11.44	3.58	1.48
Gravity Grain Box 185 bu	60	2,340	1.65	215	21.75	5.66	1.74	5.74	13.14	2.84	1.92
Gravity Grain Box 240 bu	75	3,780	1.65	215	25.80	7.21	2.64	5.74	15.59	3.70	2.40
Baled Hay Wagon	40	2,970	3.78	945	28.12	1.79	0.62	5.02	7.43	0.99	0.56
Forage Wagon 14 ft	40	10,080	1.65	215	26.94	4.10	6.44	5.74	16.28	3.14	1.28
Forage Wagon 16 ft	40	11,340	1.65	215	28.08	4.10	7.13	5.74	16.97	3.32	1.28
1 Ton Hay Stacker	60	21,240	4.15	829	44.57	2.26	5.28	3.21	10.75	3.63	0.77
3 Ton Hay Stacker	75	31,410	4.84	1,064	57.39	2.47	6.65	2.75	11.87	4.69	0.82
6 Ton Hay Stacker	105	50,760	5.53	1,548	81.96	2.86	9.56	2.41	14.83	7.32	1.01

1) Total cost per hour is calculated as yearly depreciation, interest, insurance, housing and repairs, divided by hours used per year. Implement and power unit costs are summed. Fuel, lubricants, and labor are added to the total. 2) Total cost per acre is total cost per hour divided by acres per hour. Includes operating expenses, labor and overhead costs. 3) Operating expenses are included in total cost per acre and include fuel, lubricants, repairs and maintenance, but not labor. Labor is listed separately.